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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,659	10/31/2003	Cullen E. Bash	100201724-6	8386

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HEWLETT-PACKARD COMPANY  
Intellectual Property Administration  
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EXAMINER

NORMAN, MARC E

ART UNIT PAPER NUMBER

3744

DATE MAILED: 05/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/697,659

Applicant(s)

BASH ET AL.

Examiner

Marc E. Norman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2-4, 10, 11, 24, 37 and 50-69 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-4, 10, 11, 24, 37, 50-52 and 55-69 is/are rejected.
- 7) ☒ Claim(s) 53 and 54 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 10/31/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 10, 2-4, 11, 51, 52, and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spinazzola et al. (U.S. Patent 6,557,357 B2) in view of Nakazato et al. and further in view of Burd.

As per claim 10, Spinazzola et al. teaches a cooling system for cooling racks comprising:

- cooling device 14 including fan 16; and
- plenum 4b having a plurality of returns 24 and an outlet 28 in fluid communication with fan 16, wherein the returns are configured for removing the cooling fluid from the data center (via fans 24a, 24b).

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Spinazzola et al. does not specifically teach varying a characteristic of the removal of the cooling fluid through the returns. Nakazato et al. teaches a similar arrangement whereby fans 7f of returns 7b from the data racks 7 are controlled to vary the removal of cooling fluid from each of the racks according to the temperatures sensed by sensors 32 and 33. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply these air removal control features of Nakazato et al. to the plenum system of Spinazzola et al. for the purpose of accurately controlling the temperatures of the data racks.

The combination of Spinazzola et al. and Nakazato et al. does not teach a mobile sensing device employable by the cooling device for controlling the cooling fluid. However, the concept of mobile temperature sensors/controllers is old and well-known in the art, as exemplified by Burd. Burd teaches mobile thermostat 9 used in conjunction with a master controller (Abstract, lines 16-18) to control a cooling system. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply a mobile unit such as that taught by Burd to the combined system of Spinazzola et al. and Nakazato et al. for the simple purpose of providing more flexible control of the cooling system (see Abstract of Burd, lines 8-9).

As per claims 2, 3, and 4, Nakazato et al. respectively teaches the control characteristic being the volume flow rate (step 105, Figure 3); controller 40 independently controlling the flow rate of each return (Figure 2); and a plurality of temperature sensors 32, 33 and controller 40 independently controlling the returns in response to the measured condition (Figure 3). Again, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply these air removal control features of Nakazato et al. to the plenum system of Spinazzola et al. for the purpose of accurately controlling the temperatures of the data racks.

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As per claim 11, Nakazato et al. further teaches independent control of return fans 7f according to corresponding sensors 33.

As per claim 51, again Burd teaches the mobile device relaying data to the system controller. It would have been obvious to coordinate such mobile sensing with the return control for the reasons already discussed above.

As per claim 52, see discussion of claim 2 above regarding varying the flow rate.

As per claim 55, Burd further teaches using the mobile device at various heights (see Figure 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply this feature of Burd to the combined system of Spinazzola et al. and Nakazato et al. for the purpose of controlling the temperature at different heights within the control space, since it is well known that vertical temperature gradients occur within air conditioned spaces.

Claims 24, 37, 50, and 56-69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spinazolla et al., Nakazato et al. and Burd as applied to claim 10 above, and further in view of Nakanishi.

As per claims 24, 37, 50, 59, 64, and 69, the combined references of Spinazolla et al., Nakazato et al. and Burd do not teach the control being based on a predetermined temperature range. Nakanishi et al. teaches a method of cooling a computer room wherein the controller determines if sensed temperatures are within a predetermined range (Abstract, lines 13-15). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine this feature of Nakanishi et al. to the combined teachings of Spinazolla et al., Nakazato et al. and Burd for the purpose of refining the control of temperature within the room,

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particularly since Nakanishi et al. is also directed to controlling the distribution of temperature within a computer room.

As per claims 56, 61, and 66, see discussion above of similar claim 2.

As per claims 57, 62, and 67, again Nakazato et al. further teaches independent control of return fans 7f according to corresponding sensors 33.

As per claims 58, 63, and 68, again Burd teaches the mobile device relaying data to the system controller. It would have been obvious to coordinate such mobile sensing with the return control for the reasons already discussed above.

As per claims 60 and 65, Nakazato et al. teaches the temperature sensors being placed at the plurality of racks.

#### ***Allowable Subject Matter***

Claims 53 and 54 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Conclusion***

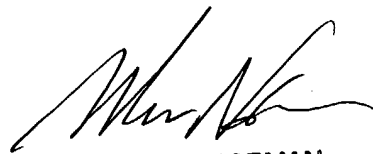
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc E. Norman whose telephone number is 703-305-2711. The examiner can normally be reached on Mon.-Fri., 8:00-5:30, with first Fridays off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Denise Esquivel can be reached on 703-308-2597. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MN



**MARC NORMAN**  
**PRIMARY EXAMINER**